Biological Opinion
For the issuance of a Section 10(a)(1)(B) Incidental Take Permit for Lake Erie water snake (*Nerodia sipedon insularum*) in the Long Point Homeowner's Association, LLC Habitat Conservation Plan Kelleys Island, Erie County, Ohio

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Prepared by: Megan Seymour, Wildlife Biologist
Reynoldsburg, OH Ecological Services Field Office

This document transmits the U.S. Fish and Wildlife Service's (FWS or Service) biological opinion for the proposed issuance of a section 10(a)(1)(B) permit allowing the incidental take of Lake Erie water snake (*Nerodia sipedon insularum*) at the Long Point Homeowner's Association LLC (LPHA) property on Kelleys Island, Erie County, Ohio. This biological opinion documents the likely effects on Lake Erie water snake in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

This biological opinion is based on information provided in the Incidental Take Permit application, the accompanying draft Environmental Assessment (EA)/Habitat Conservation Plan (HCP) and draft Implementing Agreement (IA), numerous telephone conversations, and other sources of information. A complete administrative record for this consultation is on file at the Reynoldsburg, Ohio Ecological Services Field Office (ROFO).

CONSULTATION HISTORY

Oct. 29, 1999	FWS letter to LPLLC	FWS recommended LPLLC (now LPHA) develop an HCP
Nov. 10, 1999	Meeting at ROFO	FWS and LPLLC meet to discuss project and need for a HCP
Nov. 17, 1999	FWS letter to LPLLC	Follow-up to Nov. 10 meeting stating that FWS still recommends LPLLC develop a HCP
Nov. 22, 1999	Site visit	Long Point, Kelleys Island
Dec. 21, 1999	LPLLC letter to FWS	LPLLC intends to work with FWS to develop an HCP
Dec. 30, 1999	LPLLC letter to FWS	Letter identifying HCP areas of agreement and disagreement between LPLLC and FWS
Jan. 25, 2000	Meeting	
Feb. 9, 2000	FWS letter to LPLLC	Follow-up to Nov. site visit and Jan. meeting expressing FWS continuing to work with LPLLC to complete the HCP
Mar. 20, 2000	FWS letter to LPLLC	FWS gave guidance to LPLLC on digging test holes for septic system to avoid take. FWS recommends that no ground disturbing activity occur until HCP complete and ITP issued.

Aug. 2, 2000	First draft HCP submitted to FWS	
Dec. 20, 2000	FWS letter to LPLLC	FWS comments on first draft HCP. Numerous comments on how HCP can be improved.
Jan. 25, 2001	FWS letter to LPLLC	Follow-up to Dec. letter with additional measures suggested for HCP.
Apr. 16, 2001	LPLLC letter to FWS	LPLLC requesting FWS approval to proceed with road construction
May 2, 2001	LPLLC letter to FWS Regional Office (RO)	LPLLC submitted a draft plan to RO (same plan that was sent to ROFO in Aug.) and expressed willingness to continue working on HCP
May 21, 2001	FWS letter to LPLLC	To expedite process, FWS sends LPLLC a revised draft HCP incorporating FWS comments into Aug 2000 draft.
July 26, 2001	FWS initiates NEPA scoping	30-day comment period ending on Aug.27, 2001
Oct. 2, 2001	FWS letter to LPLLC	NEPA decision on HCP - Service requires an EA and recommends LPLLC hire a consultant to draft to expedite process.
Nov. 14, 2001	LPLLC submits rough preliminary draft HCP/EA to FWS	Draft submitted for review and discussion on conference call with LPLLC and FWS. FWS comments submitted verbally and via email
Jan. 2002	LPLLC submits preliminary draft HCP/EA	Draft submitted for review and discussion on Jan. 31 conference call with LPLLC and FWS. FWS comments submitted verbally and in writing (email and letter)
Feb. 14, 2002	FWS letter to LPLLC	Summarize FWS comments on Jan. 2002 draft HCP/EA (follow-up to Jan. 31, 2002 conference call). Service expresses concern over continuing lack of detail about project. FWS asks for full disclosure of activities so project can be fully analyzed for avoidance, minimization, mitigation, and for NEPA purposes.
Apr. 10, 2002	LPLLC submits updated preliminary draft HCP/EA to FWS	FWS comments submitted verbally and via email

Jul. 29, 2002	LPLLC submits updated preliminary draft HCP/EA to FWS	FWS comments submitted verbally and via email
Jan. 9, 2003	FWS letter to LPLLC	FWS response to Dec. letter. FWS expresses continuing commitment to mutual resolution and completion of HCP
Jan. 14-15, 2003	Meeting at RO with LPLLC	Meeting took place to resolve HCP issues.
Jan. 15, 2003	Letter of Intent to complete HCP	Drafted by DOI Solicitor and signed by FWS and LPLLC
Mar. 11, 2003	LPLLC (now LPHA) submits final draft HCP/EA to FWS, draft Implementing Agreement, and Section 10(a)(1)(A) permit application	
Mar. 17, 2003	Publication date of FR NOA of draft HCP/EA and beginning of 60 day public comment period	

In addition to the above correspondence, there were numerous telephone communications between representatives from the Service, LPHA, their legal counsel, and consultants.

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the issuance of a section 10(a)(1)(B) incidental take permit (ITP) for the incidental take of the Lake Erie water snake. LPHA proposes to develop a 15-acre property with seven private residences intended primarily for seasonal occupation. The LPHA property (Property) extends along 0.549 km of Lake Erie shoreline on the Long Point peninsula, Kelleys Island, Erie County, Ohio. Per the Endangered Species Act of 1973 (Act), as amended, and its implementing regulations, the applicant, LPHA, submitted the initial draft Habitat Conservation Plan (HCP) to the Service on August 2, 2000 for review. As indicated in the Consultation History, the HCP underwent additional modification and environmental analysis to reach its final form. The ITP application and Final Draft HCP were submitted on March 11, 2003. The purpose of the ITP is to allow incidental take of Lake Erie water snake resulting indirectly from construction and occupation of seven houses on the Property. The permit term is for a period of 15 years.

All owners of units on the Property will be members of the LPHA, an organization set up to manage, administer, and maintain the Property. Each individual lot on the Property contains a deed restriction that provides the mechanism for funding and implementing the conservation

measures listed in HCP. The LPHA will consist of the 7 homeowners for the 7 lots specified in this document.

The submitted draft HCP identifies conservation measures the Applicant intends to implement for the purposes of minimizing and mitigating incidental take that may occur in the future. A summary of the proposed conservation measures is provided below (see HCP for additional information). The primary goal of the HCP is to address human activities so that human alteration of this habitat is avoided and natural use of the Property by the Lake Erie water snake (LEWS) is allowed to occur.

1. A "buffer area" would be established on each lot, consisting of all areas from the shoreline to 125 ft landward of the Ordinary High Water (OHW) mark (Zones A and B, see EA/HCP for map). No residences, garages, or other outbuildings, roads, driveways, access roads, or septic mounds will be constructed within this area.

2. LPHA will provide access routes for LEWS from the water towards the center of the peninsula along property lines. These routes will be dominated by vegetation types that now occur on the site, and will be at least 5 ft in width on both sides of property lines (i.e., total of 10 ft wide) that run approximately perpendicular to the water's edge.

3. To avoid effects to near shore habitat where most hibernacula occur, no turf-grass lawns would be established within Zones A and B. Herbicides, pesticides, fertilizer, and any mulch containing materials other than natural wood products will not be applied within Zones A and B, except for spot treatment of poison ivy.

4. The existing stone building foundation in Lot No. 3 provides habitat for LEWS and shall not be disturbed by construction or other activities.

5. Two artificial hibernacula per lot, if practicable, for a guarantee of 14 hibernacula, would be constructed on the 15-acre tract in Zone C.

6. Pets would be controlled as specified in Section 2.3 of the EA/HCP

7. LPHA has abandoned all previously existing shoreline roadway easements, including the shoreline access road, for a total area of 5.36 acres of easements on Long Point. This area will be allowed to revert back to a natural state, providing additional habitat for LEWS, and helping to reduce road kill events by moving the road away from the shoreline where snakes are commonly found.

8. Signs would be posted on the 15-acre tract along the new access road promoting low vehicular speeds and alerting users of the potential presence of LEWS.

9. Ground-disturbing activities on the 15-acre tract would be permitted only between May 1 to November 1 when both air and ground temperatures have been above 65°F for five consecutive days prior to excavation and/or construction. On the day of excavation or burning, air and

ground temperatures are to be above 65°F in accordance with the Service's Interim Lake Erie Water Snake Guidelines (Appendix C of the EA/HCP).

10. Fire pits will be limited to one per lot in a permanent location in Zone B or C. Fire pits will be a maximum of 10 ft^2 each and will not be filled with materials (e.g. brush, leaves, branches, logs) until the time of burning to avoid harming snakes that may seek shelter in piles of debris.

11. To avoid or minimize to the extent practicable effects to LEWS, mowing would be implemented only as specified in Section 2.3.9 of the EA/HCP.

12. Water features (e.g., fountains, pools, hot tubs) will be constructed above ground to discourage access by LEWS, with excavation limited to topsoil removal within the construction footprint. Water in these structures will be de-chlorinated prior to draining. Hot tubs will be covered when not in use to prevent access by snakes. Such features will not be constructed within Zones A and B.

13. Constructed trails within Zones A and B would be limited to a single boardwalk no wider than 6 ft. The boardwalks could terminate in platforms in Zones A and B no larger than 600 ft^2 built as a deck or in a rock-crib design.

14. LPHA would contribute to LEWS conservation by providing in-kind services with the approximate value of $50,000 in the form of planning and landscape design while working with the Service to prepare and implement the HCP.

15. LPHA would continue to provide access, in writing, to the 15-acre tract to facilitate research being conducted by Dr. R.B. King of N. Illinois Univ. By facilitating this research, LP Homeowner's Association LLC would aid researchers in characterizing the hibernation/hibernacula and movements of LEWS.

16. LPHA would notify the Service prior to initiating substantial development/construction activities on the 15-acre tract.

17. Access to the LPHA's 15-acre tract by Service or Ohio Division of Wildlife representatives to observe or monitor LEWS would be requested and granted in writing at a mutually agreeable date and time. This provision does not grant access to private residences, garages, or outbuildings.

18. LPHA shall report mortalities of, and injuries to, LEWS on the 15-acre tract to the Service within 24 hours of occurrence, or, if the take occurs during a weekend or holiday, by the end of the next business day.

19. During forest clearing in areas outside the footprint of buildings, trees would be cut near the ground surface, and stumps with a diameter $\geq$ 6 inches at the ground surface would be left in place. Stumps with a diameter < 6 inches at the ground surface may be removed if no base cavities are present. Stumps < 6 inches diameter with base cavities will not be removed. Existing stumps may not be removed but may be trimmed to ground level.

20. Conveyance of the seven lots from LPLLC to private ownership included a deed restriction requiring that present and future owners comply with HCP/ITP for the duration of the permit (Appendix F of EA/HCP).

21. Lot owners would advise all visitors/renters/lessees of the LEWS protection measures and restrictions in the HCP/ITP.

22. Maximum area of each lot to be cleared of forest cover for construction of residences, each with a deck/patio, garage, septic mound, and driveway is 1.0 acre.

23. Maximum cleared area to be within footprint of buildings, driveways, concrete slab or maintained in turf-grass lawn/landscaped areas in Zone C is 0.75 acres.

24. Material used to construct driveways will be light colored gravel, to discourage snakes from basking.

25. Maximum width of driveways to residential areas will be 12 feet.

26. Duration of Incidental Take Permit will be 15 years.

The Applicant is responsible for ensuring implementation and compliance with the conservation measures in the ITP and the HCP. Specifically, the LPHA will (1) implement the conservation measures identified in the HCP through bylaws and deed restrictions, (2) monitor lot owner compliance with the conservation measures, and (3) implement prompt corrective action to remedy any non-compliance observed. The LPHA will ensure implementation and compliance with the terms of the ITP. Members and guests will be verbally alerted if such terms are violated. If prompt remediation does not occur, the LPHA will notify the Service. Failure to abide by these processes may result in non-compliance with the ITP and the LPHA or individual lot owners could be subject to section 9 enforcement and incur section 11 penalties.

The LPHA will pay a one-time fee of $750 for the installation of signs relating to the Lake Erie water snake and HCP on the property. Funds currently exist within the LPHA, which have been obligated for this expense. In addition, $1,250 will be provided by the LPHA for each annual monitoring event specified in the HCP (not to exceed $18,750). LPHA has funding obligated for this task and has the mechanism to collect funds through deed restrictions on the Property.

"Action area" is defined as all areas that will be affected directly or indirectly by the Federal action (502 CFR §402.02). The Property is situated on Long Point, a peninsula on the northeast portion of Kelleys Island, located several miles north of the Ohio mainland in Lake Erie. The area affected by this proposed project (i.e., action area) is the Long Point peninsula. The reasoning behind selection of the action area is described below.

Lake Erie water snakes on Kelleys Island are distributed island-wide, staying near the shoreline in the summer and retreating inland to hibernate during the winter. Snakes rarely move

between islands, and most remain on a given island throughout their lifetime. Lake Erie water snakes typically display site fidelity, returning to the same summer and hibernation locations each year. King (2003) found that the extent (length) of shoreline used by 75% of individual snakes during the summer active season is 437 m (1434 ft) or less. King (2003) also found that three-fifths of Lake Erie water snakes used hibernation sites that were directly inland from shoreline areas used during the summer active season, while the remaining two-fifths of the population used hibernation sites that were outside of the extent of shoreline used during the summer active season. Some of these snakes moved long distances to reach hibernation habitat from summer habitat. These data indicate that snakes inhabiting the edges of the Property are likely to move off the property during some portion of the summer season, and some may leave the property to hibernate elsewhere during the hibernation period. Furthermore, this may also indicate that snakes occurring near but not on the Property are likely to access the Property during some portion of the summer season, and may move onto the property to hibernate during the hibernation period. Therefore, the proposed project may have impacts on snakes that typically occur near, but not on the Property, and snakes that may be affected by the proposed project may stray off the Property onto adjacent lands. The action area therefore includes the Property and adjacent lands encompassing the entire Long Point peninsula.

Lake Erie water snakes that may use the Property would be part of the Kelleys Island subpopulation, and are likely to remain on or near Long Point for most of their lifetimes. As such, activities that affect Lake Erie water snakes using the Property are only likely to impact the portion of the Kelleys Island snake population inhabiting Long Point. Thus, the action area for this proposed action includes only the Long Point peninsula, and no additional portions of Kelleys Island.

STATUS OF THE LAKE ERIE WATER SNAKE POPULATION

Unless noted otherwise, all information is cited from U.S. Fish and Wildlife Service (2003) and references within. This section is a discussion of the Lake Erie water snake which includes information on the species' life history, its habitat and distribution, and past human and natural factors that have led to the current status of the species.

Species Description

The Lake Erie water snake, an aggressive, nonvenomous snake, is a member of the family Colubridae. The dorsal color pattern of the Lake Erie water snake is highly variable, ranging from uniformly gray and unpatterned to regularly patterned with a series of dorsal and lateral blotches. Between these extremes, a variety of intermediate patterns exist in which dorsal and lateral blotches are reduced in size or number or irregular in shape. Typically, the ventral surface is uniform white or yellowish white except for the bases of the ventral scales, which are often of the same color as the dorsum. Adult females average 82.1 cm snout-vent length (SVL), and adult males average 62.5 cm SVL. Further description and taxonomic information is provided in U.S. Fish and Wildlife Service (2003).

The offshore island populations of the Lake Erie water snake were listed as threatened under the Endangered Species Act of 1973, as amended, in August 1999. The threatened

designation does not apply to the Ohio mainland and nearshore island population because of the likelihood that they interbreed with northern water snakes (*Nerodia sipedon sipedon*). A Draft Recovery Plan for the Lake Erie water snake was recently submitted to the Region 3 Regional Office for publication and public comment. No critical habitat has been designated for this species.

Life History

Lake Erie water snakes are active primarily between early May and early October, depending on seasonal temperatures and weather. Snakes typically enter hibernation between mid-September and mid-October and emerge from hibernation between late-April and late-May.

Lake Erie water snake summer habitat is composed of shorelines that are rocky or contain limestone/dolomite shelves and ledges for sunning and shelter. Shelter occurs in the form of loose rocks, piled rocks, or shelves and ledges with cracks, crevices, and nearby sparse shrubbery. Certain types of human-made structures serve as shelter for Lake Erie water snakes as well, provided adequate space exists in these structures that is above Lake Erie's water and ice levels. Observations indicate that the Lake Erie water snake will use rock-filled timber or steel crib docks for summer basking and resting habitat. In addition, shoreline erosion protection, such as riprap, provides some summer habitat for the snake. Ponds or wetlands, including quarries, found within the interior portions of the islands also provide summer habitat for a small number of Lake Erie water snakes. Shoreline vegetation plays an important role in providing cover for the Lake Erie water snake. The exact type of vegetation does not appear to be important, but its use depends on vegetation density and proximity to the shoreline and basking areas. Dense shrubs, brush, and vines such as grape (*Vitis spp*.), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), and red cedar (*Juniperus virginiana*) all provide good sources of cover when located in proximity to the shoreline. Incidental observations indicate that the Lake Erie water snake can tolerate removal of some shoreline vegetation, provided other forms of cover, such as rock, are present in the area. Brush piles composed of branches, sticks, twigs, and lawn clippings located close to the shore are also noted to provide suitable refugia for snakes during the summer.

Lake Erie water snakes remain near shore during the summer active season. Seventy-five percent of Lake Erie water snakes stay within 13 m (42.7 ft) of the shoreline. The extent (length) of shoreline used by 75% of individual snakes during the summer active season is 437 m (1434 ft) or less. Typically, Lake Erie water snakes demonstrate site fidelity, returning to the same area of shoreline each summer.

Lake Erie water snake hibernation sites include both natural areas and human-made structures. Most identified hibernation sites have soil and rock substrates and consist of natural openings or fissures. Some of the natural areas that provided hibernation sites include cracks and crevices in bedrock, rock piles, tree root masses, and mammal burrows. Additionally, some hibernation sites have been identified in or near human-made structures. These include old building foundations, drainage tiles, sewer lines, concrete shoreline protection, and cellars. Evidence indicates that adult snakes hibernate individually or in small groups of two to three snakes.

Hibernation sites for the snakes vary in distance from the shoreline, but 75% of snakes hibernate within 69 m (226.4 ft) of the shoreline. Typically, Lake Erie water snakes demonstrate site fidelity, returning to the same hibernation location each year.

The Lake Erie water snake's diet is composed mainly of fish and amphibians found in the nearshore waters of the lake. Little has been documented about foraging behavior or locations and composition of suitable foraging habitat. It is suspected that the Lake Erie water snake forages for food in and around rocks and vegetation near the shore of the islands.

Female Lake Erie water snakes reach sexual maturity at approximately 3 years of age, while males typically become mature at 2 years of age. In Lake Erie water snakes, sexual maturity is achieved when females reach a length of at least 60 cm (23.6 in) SVL, and when males reach a length of at least 44 cm (17.3 in) SVL. The Lake Erie water snake participates in courtship behavior from early May to early June, utilizing scramble competition. Parturition occurs between mid August and late September, with females giving birth to an average of 23 live young per litter

At birth, neonate Lake Erie water snakes average 18.1 cm (7.1 in) SVL and 4.8 g (0.17 oz). Neonate snakes grow very little before entering hibernation, and typically emerge from hibernation the same size as when they entered. Adult snakes are long-lived; several mark-recapture studies have identified snakes estimated to be up to 10 years old

Population Dynamics

Approximately 95 percent of the Lake Erie water snake population's gene pool exists on the offshore islands of western Lake Erie. The offshore islands are isolated from the Ohio and Ontario mainland by approximately 5 to 14 km (3 to 9 mi) of water. Although not a complete barrier, the distance from offshore islands to the mainland (and the near-shore islands) creates a natural barrier. This barrier maintains the integrity of the Lake Erie water snake gene pool by significantly limiting interbreeding between offshore island Lake Erie water snakes and mainland and near-shore northern water snakes. Individual snakes rarely move among islands, or between islands and the mainland, however some gene flow of this type has been documented. This small amount of gene flow is significant enough to maintaining greater genetic variation than if subpopulations were completely isolated.

A study of annual survivorship and demographic perturbation analysis is scheduled to be completed this year. This research will provide data on annual survivorship and reproduction, which will be used to predict future population trends and to identify critical life stages for protection.

Status and Distribution

The current distribution of Lake Erie water snakes is reduced compared to their historic distribution. The historic range of the Lake Erie water snake included 22 or more offshore islands and rock outcrops (12 U.S. offshore islands, 9 Canadian islands, and various rock

outcrops) of western Lake Erie, and shorelines of the Catawba/Marblehead Peninsula, and nearshore islands (Mouse and Johnson) in Ohio. Today, Lake Erie water snakes no longer occur on three islands: Middle Sister Island (Ontario), North Harbour Island (Ontario), and West Sister Island (U.S.), and population sizes have declined significantly on the remaining islands.

Nine U.S. islands currently support subpopulations of the Lake Erie water snake year-round (Kelleys, South Bass, Middle Bass, North Bass, Rattlesnake, Gibraltar, Sugar, Ballast, and Green Islands), while two U.S. islands provide only summer habitat (Starve and Gull Islands). The four largest U.S. islands (Kelleys, South Bass, Middle Bass, and North Bass) support the vast majority of the U.S. Lake Erie water snake population.

Recent data show fluctuations in population density (i.e., number of Lake Erie water snakes per km of shoreline). Comparisons of population density estimates over time suggest that population sizes generally decreased from 1980-85 to 1988-92 (by 33 adults/km at 3 sites), and from 1988-92 to1996 (by 13 adults/km at 4 sites). Comparisons of population density estimates also suggest that population sizes generally increased from 1988-92 to 2000-02 (by 23 adults/km at 3 sites), and from 1996-98 to 2000-02 (by 88 adults/km at 10 sites).

At the time of listing, the estimate for the U.S. population ranged from 1,530 to 2,030 adults, and U.S. populations of the Lake Erie water snake were restricted to only 8 islands. Population fluctuations during the late 1990's and early 2000's have resulted in increases and decreases in local populations, but in general, populations appear to be increasing. Results of censuses on Kelleys, South Bass, Middle Bass, North Bass, Green, and Sugar Islands conducted from 2000-2002 estimate that the current U.S. population of Lake Erie water snakes on these islands totals approximately 5,473 adults.

Threats

The most severe threats to the Lake Erie water snake are habitat loss and degradation, due to development activity on or near the snake's summer and hibernation habitat, and both intentional and accidental human-induced mortality. Natural threats to the survival of the snake include extreme weather conditions, and the fact that the snake's geographic distribution is limited only to the islands in the Western Lake Erie basin.

Habitat loss and alteration is a major cause of the decline of the Lake Erie water snake. During the past 60 years, shoreline habitat important to the water snake has been significantly altered, degraded, and developed through the construction of shoreline cottages, marinas, sheet steel docks, and sea walls, the filling of wetlands, and the mining of quarries. Current development on both Canadian and U.S. Lake Erie islands is resulting in continued loss of Lake Erie water snake habitat. As discussed under the ***Life History*** section, the Lake Erie water snake can benefit from some forms of human development, especially if the structures are designed and constructed while considering the biology and habitat needs of the snake. With some simple design changes and time restrictions, some shoreline projects (for example docks, revetments, and breakwaters) can be constructed in a manner that eliminates adverse effects on the snake and its habitat, and may benefit the snake by creating artificial summer habitat. Additionally, some human-made structures provide suitable hibernation sites for the snake.

In addition to commercial, residential, and recreational development projects, habitat is also being degraded by shoreline management practices that are incompatible with Lake Erie water snake habitat needs. Shoreline vegetation is regularly cleared or mowed at many locations on the U.S. islands in order to provide a clear vista of the lake, easy access to the water, or for aesthetic reasons. As discussed above, shoreline vegetation is an important component of summer habitat and removal of this vegetation reduces the suitability of the habitat for snakes.

Intentional persecution by humans is the most significant and well documented factor in the decline of Lake Erie water snakes. Persecution by humans was still a serious problem until just before the snake was listed under the ESA. The common misconception that the Lake Erie water snake is dangerous or poisonous resulted in much persecution, and a fear of snakes in general lead to additional eradication efforts. Since listing the snake as a federally threatened species in 1999, reports of intentional killing of snakes seem to have decreased somewhat. The effects of past and current persecution are evident today when comparing historic population sizes with current population estimates. Continued persecution will result in reduced population size and may inhibit complete recovery of the Lake Erie water snake population.

Mortality due to snake-vehicle collisions also represents a significant threat to the Lake Erie water snake population. Road-killed snakes, especially neonates, are regularly reported throughout the summer on most of the islands. Many roads have been constructed along the shoreline of the islands to facilitate access to shoreline property. Although Lake Erie water snakes typically stay close to the shore during the summer, most snakes move inland to hibernate and must cross roads to do so. Furthermore, increased visitation to the islands by vacationers and tourists aggravates the vehicle collision problem by introducing even more vehicles to the islands. As the tourism industry grows, it is expected that mortality from vehicles will increase, constituting a threat to the survival of the Lake Erie water snake population.

The threats discussed above are further exacerbated by a reduced population size and by the insular distribution of the Lake Erie water snake. These factors make the snake more vulnerable to extinction or extirpation from catastrophic events, demographic variation, negative genetic effects, and environmental stresses such as habitat destruction and extermination than if they were not a small, island-based population.

ENVIRONMENTAL BASELINE

*This section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem, within the **action area.** It includes a description of the status of the species within the **action area**.*

As explained under Project Description, the action area for this consultation includes the Long Point peninsula. Long Point is an approximately 100-acre peninsula at the northeastern extreme of Kelleys Island. The LPHA Property is located in the center of the peninsula, private property is located on the northern tip of the peninsula, private property is located on the southwestern portion of the peninsula, and the Cleveland Museum of Natural History owns the southeastern portion of Long Point. The majority of Long Point including the LPHA Property,

Cleveland Museum of Natural History property, the northern property, and portions of the southwestern property currently exist in a natural state, with the exception of roads accessing the properties, a barn on the LPHA Property, and two homes and a barn on the northern property.

Status of the Lake Erie water snake within the action area

Areas of suitable Lake Erie water snake habitat exist on Long Point, and summer and winter occurrence of the species has been documented on this peninsula (King 2002b, 2001a, 2001b). During warm months, LEWS are found at or near the shoreline of Long Point. The rocky shoreline of Long Point provides shelter, breeding, foraging, and hibernation habitat for LEWS. The snakes forage for small fish and amphibians near these locations and use spaces among rocks and along the shoreline for rest, reproduction, and protection from predators. The shoreline/vegetation interface on Long Point is used during summer and winter (King 2002b, 2001a, 2001b).

The status of the Lake Erie water snake population in general appears to be stable. Site-specific population densities and estimates over the past five years show mixed trends, depending on island and site, but in general, U.S. adult population size appears to be increasing (King 2002b). Within the action area, population density estimates from 1980-1985 were 63 adult snakes per kilometer (King 2002b). Population density estimates for the 2000-2002 field seasons within the action area are now estimated to be 80 adult snakes per kilometer (King 2002b). This demonstrates a stable population size within the action area in the past 15 years (RB King, Northern Illinois University, pers. comm. 2003).

The LPHA property currently exists in a mostly forested state. An old barn exists on the Property, as does the newly constructed access road. The former access road paralleling the shoreline has been abandoned, and will be allowed to revert to native vegetation. An old building foundation also exists on the Property, which provides hibernation habitat for Lake Erie water snakes, and will not be disturbed by the project. Lake Erie water snakes are known to use the Property for both summer and hibernation habitat, and are expected to continue to use the Property into the future.

The portion of Long Point owned by the Cleveland Museum of Natural History (CMNH) has been designated as a nature preserve. According to CMNH's webpage, "The vision for the Natural Areas Division is to own a system of nature preserves that functions as a living museum to preserve the rich biodiversity of the Cleveland region for future generations to study and appreciate. The mission of the Natural Areas Division is to identify, acquire and protect the best examples of the broad range of natural community types in northeastern Ohio." As such, it is likely that this 21-acre property will remain in a natural state in perpetuity, and will provide a continuous habitat base for the Lake Erie water snake.

The northern parcel on Long Point is privately owned. Recently, a barn was constructed on the property, and the two existing houses are being renovated. Portions of the property have been cleared, while other portions remain forested or vegetated with tall herbaceous vegetation. It is likely that portions of this property will provide suitable Lake Erie water snake habitat now

and into the future, while other portions of this property will be subject to residential development and will not provide much suitable habitat.

The southwestern parcel on Long Point is a long, narrow property bordering the lake. This area is currently composed of native vegetation, and contains the original shoreline road that is proposed to be abandoned. It is reasonable to assume that this property could be cleared or developed in the future, although Kelleys Island zoning may limit the extent of the development. This parcel currently provides suitable Lake Erie water snake habitat.

King (2002b) estimated that the total adult Lake Erie water snake population on Kelleys Island is 1,942 adult snakes and total U.S. population (including Green, Kelleys, Middle Bass, North Bass, South Bass, and Sugar Islands) is 5,473 adult snakes. King (2002a) estimated the population of LEWS along 2.74 km of the Long Point shoreline, including the 15-acre tract, at approximately 240 adults, or approximately 87.5 adult snakes per km. The action area then supports about 12.4% of the Kelleys Island population, and 4.4% of the total U.S. Lake Erie water snake population. The LPHA Property contains 0.549 km of shoreline, which is 20% of the total Long Point shoreline. Assuming snakes are distributed relatively evenly over Long Point, the LPHA Property likely supports approximately 20% of the Long Point population, or 48 adult Lake Erie water snakes. The snakes on the LPHA Property represent approximately 2.5% of the total Kelleys Island population, and 0.877% of the total U.S. population.

Factors affecting Lake Erie water snake's environment within the action area

The major threats to the existence of Lake Erie water snakes in the action area are loss of summer and hibernation habitat and both intentional and accidental human-induced mortality. Loss of hibernation habitat from inland development and loss of summer habitat from shoreline development and mismanagement all contribute to adverse affects on the Lake Erie water snake. Construction of homes, garages, and barns all represent types of activities that result in hibernation habitat loss and potential take of individual snakes. Removal of shoreline vegetation and rock structures, and construction of sheet steel docks or shoreline erosion control structures are activities that likely result in loss of summer habitat for the snake. Human-induced mortality from vehicle collisions or lawnmower encounters cause accidental take, while purposeful killing causes direct take of snakes.

Some of the above actions may occur on the northern property in the future, as two existing homes are currently being renovated and a barn was recently constructed. The above actions may occur on the southwestern property, although Kelleys Island zoning may preclude development on this parcel. Portions of the action area are protected from habitat loss. The 21-acre CNMH property will likely remain undeveloped in perpetuity, providing a continuous habitat base for the snake. Public access to this parcel is also restricted, which typically limits the potential for accidental and intentional human-induced mortality to occur.

EFFECTS OF THE ACTION

*This section includes an analysis of the effects of the **proposed action** on the species, its habitat, and its interrelated and interdependent activities. It also includes indirect effects, which are*

caused by or result from the proposed action (and the interrelated and interdependent activities), later in time, and, reasonably certain to occur.

As more fully described below, the Service believes that direct take in the form of mortality, harm, and harassment is likely to result from such activities as construction and maintenance of residences and associated LPHA development, roadkill events, and other otherwise lawful activities, despite full implementation of the proposed conservation measures. It is reasonable to expect that no more than 15 adult snakes will be taken during the duration of the ITP (approximately 1 snake per year of ITP duration). This estimate is based on the amount of habitat to be permanently lost (5.25 acres) and a population estimate of 48 snakes utilizing the 15-acre Property. It is also reasonable to assume that a number of immature snakes will be taken during the duration of the ITP permit. No estimates of immature Lake Erie water snake populations on the Property exist. In addition, annual survivorship of immature snakes is not known. Finally, immature snakes that are taken by the proposed project will be hard to detect because of their small body size, and because of the likelihood that the carcass will be scavenged. Therefore, the Service proposes that effects to immature snakes be quantified using the area of habitat affected by the project (5.25 acres) as a substitute for immature snake mortality.

As explained in the *Environmental Baseline* section, the physical attributes of the shoreline of the Property constitute suitable summer habitat for the Lake Erie water snake, while the interior portions of the Property provide suitable hibernation habitat. The species has been documented to use both types of habitat on the Property. The 15-acre Property provides year round habitat for approximately 48 adult Lake Erie water snakes. Implementation of the Preferred Alternative (Alternative 3) includes substantive measures to avoid, minimize, and offset effects on Lake Erie water snake habitat, however it is reasonable to expect that adverse effects will result despite these conservation measures.

Effects of Construction

Implementation of Alternative 3 will result in the permanent loss of 5.25 acres of hibernation habitat, (which is estimated to provide 10 individual hibernacula), and the temporary disturbance of an additional 1.75 acres of hibernation habitat for construction of residences and associated developments. Construction of residences and associated developments is not expected to result in death of individual snakes if the applicant adheres to the Service's Interim Lake Erie water snake guidelines, as is proposed in the HCP. Loss of this habitat may, however, result in harm to individual snakes or death of individual snakes, as it is not known how snakes respond when they return to the hibernation location from previous years and find that it is no longer present. It is reasonable to assume that some of these snakes will not find other suitable hibernation locations and will die, or that the snakes may find only marginal hibernation locations that may result in physical harm short of death. LPHA proposes to create artificial hibernacula to replace the hibernacula lost during construction. This action is likely to offset the loss of hibernation sites for at least some of the snakes on the Property, and will help to reduce total take of snakes. The effects of the loss of 5.25 acres of habitat will likely result in death of a small number of individuals, decreased fitness of a small number of individuals, and reduced overwinter survival of some members of the population.

Furthermore, during construction snakes will not be able to use portions of habitat that are typically available. Therefore, the project will result in harassment in the form of changes to the daily behavioral patterns of individual snakes on the Property. This harassment is not expected to result in death or injury to any snakes.

The following conservation measures are proposed to be implemented to avoid, minimize, and offset potential adverse effects on Lake Erie water snake habitat from construction of Alternative 3:

- The LPHA agrees to implement the Service's Interim Lake Erie water snake guidelines, which provide seasonal and temperature restrictions on excavation to avoid disturbing hibernating snakes.
- All proposed residence, garage, outbuildings, roads, driveways, access roads, and septic mound construction will not occur within the area between the shoreline and 125 feet inland (Zones A and B). This will protect the area within which more than 50% of hibernacula are found.
- No turf grass lawn will be established within these same zones, and herbicides, pesticides, and fertilizers will not be utilized within these zones, except for occasional spot-treatment of poison ivy, to avoid disturbance of important shoreline vegetation habitat.
- Constructed trails to access the shoreline within zones A and B would be limited to a single boardwalk no wider than 6 feet, and terminating in a platform no larger than 600 ft^2 (For a combined total of 4200 ft^2) to minimize overall disturbance of important shoreline habitat.
- Ten-foot access routes for the Lake Erie water snake from the shoreline to inland areas will be provided along property lines and will be composed of natural vegetation to promote safe travel between the shoreline and hibernation sites.
- Mowing in Zones A, B, and C will be subject to restrictions, as proposed in the EA/HCP, to minimize disturbance of important shoreline habitat.
- Maximum area of land to be cleared per lot for construction of residences and associated building will be limited to 1.0 acre, with a maximum of 0.75 acres remaining in a developed or landscaped area once construction has been completed. The number of hibernacula that will potentially be affected by this construction is estimated to be 10.
- Two artificial hibernacula per lot will be constructed to replace any hibernacula disturbed during construction of residences and associated buildings. It is expected that the artificial hibernacula will provide suitable replacement habitat for snakes displaced by construction, and will provide additional hibernation habitat for the expanding population in the future.
- LPHA will protect the existing stone building foundation in Lot 3, which currently provides hibernation habitat.
- During forest clearing activities, stumps greater than 6 inches at ground level and all stumps with base cavities will not be removed to protect potential hibernacula.

Effects of human habitation

Once construction on the Property is complete, and people begin to reside in the new residences, it is reasonable to assume that accidental take, in the form of mortality, harm, or harassment, may occur from road-kill events, encounters between snakes and lawn mowers, and similar, otherwise lawful activities.

It is unlikely that snake-vehicle collisions can be eliminated completely, especially those associated with immature snakes, because the young snakes are small and often hard to observe on roads. Implementation of the proposed conservation measures should minimize the potential for snake-vehicle collisions by (1) abandoning the old road near the shoreline where collisions were more likely and relocating the road to an area used less frequently by snakes, (2) posting signs which require slow speeds and make people aware of the presence of the snake, and (3) using road construction materials that make the road an undesirable place to bask. Inclusion of these measures will reduce the number of road kill events, promote better management of shoreline habitat, draw snakes away from dangerous areas, and make residents and visitors aware of the snake's presence, thereby minimizing accidental vehicle-induced mortality to the maximum extent practicable. In general, the presence of roads and vehicles on the property will likely cause mortality, harm, and harassment of a small number of snakes, but implementation of the conservation measures will significantly limit this form of take.

Lawn mowing represents another potential threat to the snake. Lawn mowing can result in direct mortality, harm, or harassment of individual snakes if snakes are run over by mowers. To minimize the potential impact of mowing on snakes, LPHA proposes to adhere to seasonal, height, and timing guidelines for mowing, in addition to avoiding mowing close to the shoreline where snakes are commonly found. These guidelines recommend mowing at specific seasons and times of day when the snakes would not typically be basking in the grass, and provide minimum heights of mower blades to minimize the potential of snakes being injured by mowing. It is reasonable to assume that, despite full implementation of the mowing guidelines, a small number of snakes will occasionally be taken, harmed, or harassed by lawn mowing activities. Provided the mowing conservation measures are implemented, this effect will be minimized to the maximum extent practicable.

Domestic animals present another potential threat to snakes utilizing the Property. Cats and dogs can prey on snakes, resulting in death, harm, or harassment. This potential effect is proposed to be avoided by keeping cats indoors at all times, and by restraining dogs on leashes while outside. Provided these measures are implemented, no effects are expected on the snake population from domestic animals.

On Kelleys Island, brush is regularly gathered and burned in outdoor fires because garbage pickup is limited. Snakes are known to use piles of brush for cover during the summer active season. If brush piles that contain snakes are burned, take is likely. To avoid the potential for this type of take to occur, LPHA proposes to establish one fire pit per lot, and to leave the pit empty until the time of burning to prevent snakes from taking refuge within the pit. Provided that these measures are implemented, no effects to the snake from campfires are anticipated.

To minimize potential harassing encounters between Lake Erie water snakes and humans, and to discourage snakes from using recreational and landscape water features (such as fountains

and hot tubs), LPHA proposes to construct these structures above ground, which will limit snake access. Furthermore, these structures will be de-chlorinated before draining, to eliminate any potential adverse effects to water quality or shoreline vegetation. Additionally, hot tubs will be covered when not in use to discourage access by snakes. Provided these measures are implemented, there is no effect on snakes anticipated from water features.

Furthermore, as Alternative 3 is expected to permanently modify some portions of the current hibernation and summer habitat of the Lake Erie water snake on the Property, this may result in harassment in the form of changes in the daily behavioral patterns of snakes that use the disturbed portions of the Property. Daily use of the Property by humans for outdoor recreational and maintenance purposes (ex. swimming, gardening, campfires, children playing) may cause snakes to move away from certain areas, or to avoid areas that previously provided habitat. Snakes may be temporarily or permanently displaced from portions of their former habitat. Since the species is very mobile and somewhat adaptable to human presence, this effect is not likely to result in mortality, but will likely result in harassment of a small number of snakes, as the snakes may use more marginal habitat, use smaller portions of former habitat, or move out of the area.

Take due to human habitation of the Property will be minimized to the maximum extent practicable by implementing the conservation measures described below:

- LPHA has agreed to abandon all roadway easements, including the former shoreline access road, for a total area of 5.36 acres of easements on Long Point. This area will be allowed to revert back to a natural state, providing additional habitat for LEWS, and helping to reduce roadkill events by moving the road away from the shoreline where snakes are commonly found.
- Signs will be posted on the new access road promoting low speeds and awareness of the snake.
- Driveways will be constructed with light-colored gravel, to dissuade snakes from basking, and driveways to residential areas will be limited to a maximum width of 12 feet. The new access road, which has already been constructed, also used light-colored gravel to discourage basking.
- LPHA will control pets at all times to avoid pets preying on snakes.
- Fire pits will be limited to one per lot in zone B or C, and will not be filled with materials until the time of burning to avoid harming snakes that may seek shelter in piles of debris.
- Water features such as fountains and hot tubs will be constructed above ground to discourage access by snakes. These structures will be de-chlorinated before draining, and hot tubs will be covered when not in use to discourage access by snakes.
- Lot owners agree to notify visitors and guests of the requirements of the HCP.
- The LPHA agrees to implement seasonal, height-specific, and temperature-specific mowing restrictions in Zones A, B, and C to avoid take from lawn mowing.

Finally, to aid in research on Lake Erie water snake biology and management, and to evaluate the effectiveness of the conservation measures outlined above and discussed in detail in the HCP, LPHA proposes to continue to provide access to the 15-acre tract to facilitate research being conducted by Dr. Richard B. King of Northern Illinois University and to allow monitoring

of artificial hibernacula at the times indicated in the HCP. Furthermore, LPHA agrees to provide access to the property by the Service or Ohio Department of Natural Resources Division of Wildlife with prior notification at a mutually agreeable date and time.

LPHA also proposes to notify the Service prior to beginning substantial construction activities on the Property, and to notify the Service within 24 hours of any injuries or mortalities of snakes on the Property. All present and future owners of the Property agree to comply with the HCP and Incidental Take Permit (ITP) for the duration of the permit. The ITP is proposed for a duration of 15 years.

Collectively, the effects of the action are expected to result in behavioral or physiological effects, which impair reproduction or recruitment, or other essential behavioral patterns. Death of individuals, decreased fitness of individuals, reduced reproductive potential, and reduced overwinter survival of some members of the population may result. The effect on the population may be lost reproductive capacity, and a short-term decline in the size of the population.

The measures described above have all been included in the EA/HCP to avoid, minimize, and mitigate loss of summer and hibernation habitat due to implementation of the preferred alternative. These conservation measures will minimize impacts to the Lake Erie water snake and its habitat such that disturbance does not reduce survival and recovery of the Long Point Lake Erie water snake subpopulation.

The Service is not aware of any other interrelated or interdependent actions within the action area that may have an effect on the Lake Erie water snake.

Summary

With completion of the Preferred Alternative, 5.25 acres of Lake Erie water snake habitat will be permanently lost due to construction of residences, driveways, mowed grass, and associated developments. Additionally, it is reasonable to expect that 15 adult snakes and additional immature snakes may be taken during the duration of the 15-year ITP as the result of habitat loss, driving on roads, and mowing lawns. Furthermore, harassment of snakes, in the form of changes in daily behavior patterns, and changes in daily use areas are expected for a small number of snakes. Implementation of the proposed conservation measures will limit the total loss of habitat, provide artificial hibernation habitat, and minimize both direct and indirect effects on the snake population due to the proposed project.

CUMULATIVE EFFECTS

*Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the **action area** considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.*

Anticipated future actions and their potential effects to LEWS, vegetation, migratory birds, and cultural resources are difficult to predict, however available information supports predictions regarding the development of the island's shoreline and inland habitat. The Kelleys

Island Master Plan anticipates future shoreline development on approximately 17,500 ft of currently undeveloped lakefront property, including portions of Long Point.

If the existing restriction regarding the construction of structures within 125 ft of the OHW (Kelleys Island zoning restriction) persists, and if shoreline development is similar in nature to that of Alternative 3, the development near the shoreline would consist of very low impact construction (e.g., development of a single boardwalk per lot) and/or habitat enhancement features like rock crib platforms. Existing vegetation would be left largely intact, modified by hand removal/thinning of trees, and mowing according to standards designed to avoid effects to water snakes. Therefore, between 2002 and 2020 when build out is anticipated, the only shoreline development that would occur on Long Point would be implemented as proposed in Alternative 3. Shoreline habitat quality, relative to Lake Erie water snake habitat, would not be measurably reduced from the baseline condition island-wide.

As described above, we anticipate that adverse impacts to inland habitat under Alternative 3 would be minimal. Disturbance/destruction of Lake Erie water snake hibernacula would be avoided, minimized, and offset by selecting appropriate placement of homes, by implementing seasonal and temperature restrictions on activities, and by constructing artificial hibernacula to replace existing hibernacula that are lost. If other future development on Long Point followed this pattern, the current quality of inland habitat, relative to Lake Erie water snake habitat, should not be significantly reduced and the LEWS population on Long Point should remain stable.

We anticipate that if LEWS conservation measures similar to those in Alternative 3 were carried out on Long Point, adverse affects to the LEWS and its summer, winter, and transitional habitat would be avoided, minimized, and/or offset. We anticipate that, utilizing Alternative 3, the LEWS population would remain relatively stable on Long Point even if development occurs as projected in the Kelleys Island Master Plan (2001).

CONCLUSION

After reviewing the current status of the Lake Erie water snake, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Lake Erie water snake. No critical habitat has been designated for this species, therefore, none will be affected.

It is reasonable to expect that the proposed project will result in loss of approximately 5.25 acres of Lake Erie water snake habitat, and take of 15 adult snakes and additional immature snakes. Furthermore, the project may result in harassment to a small number of individual snakes using the Property. The Service, however, believes that compliance with the proposed conservation measures will substantially reduce the potential effects to the species and its habitat to the extent that the long-term viability of the Lake Erie water snake within the action area will not be compromised. We do not anticipate that implementation of Alternative 3 will noticeably affect the long-term survival and recovery of the Lake Erie water snake on the Property, on Long Point, or on Kelleys Island. Therefore, the proposed project is unlikely to appreciably reduce the likelihood of survival and recovery of the Lake Erie water snake.

INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act of 1973, as amended (Act), and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of the Incidental Take Statement.

The proposed Long Point Homeowner's Association LLC HCP and its associated documents clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All conservation measures described in the proposed HCP, together with the terms and conditions described in any associated Implementing Agreement and any section 10(a)(1)(B) permit or permits issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR §402.14i. Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the proposed Long Point Homeowner's Association LLC HCP, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the HCP and its accompanying section 10(a)(1)(B) permit.

Amount or extent of take anticipated

Based on the HCP and the analysis of effects of the proposed action, the Service anticipates that 15 adult snakes and additional immature snakes may be taken during the duration of the 15-year ITP as the result of the proposed project and the Service's issuance of the 10(a)(1)(B) permit. It is likely that direct take of animals would happen rarely, and would most typically occur as a result of loss of hibernation sites, roadkills, and lawn mowing. It is also expected that impacts will more likely occur to immature snakes, which, due to their small size, are not easily seen and avoided. It is expected that take in the form of harm and harassment is likely to occur from loss and modification of summer and hibernation habitat due to construction of residences and associated developments, human habitation of the Property, and the activities associated with use and maintenance of outdoor portions of the Property. The loss of habitat and the take of individual animals are, however, expected to be minimized and offset such that the adverse effects of the take are only minor. As explained in the Effects section of this

biological opinion, the conservation measures proposed in the HCP conform to the biology and seasonal habitat needs of the snake. Some of these measures (i.e., Interim Lake Erie water snake guidelines) have been consistently applied and highly successful at numerous island locations within the range of the snake. We have no reason to believe these measures would be any less effective here.

Furthermore, the Service estimates that 5.25 acres of Lake Erie water snake habitat will be permanently lost for construction of residences, driveways, mowed grass, and associated developments as the result of the proposed project and the Service's issuance of the 10(a)(1)(B) permit. The effect of the loss of 5.25 acres of hibernation habitat is expected to result in the direct mortality of some snakes, however the replacement hibernation habitat is expected to minimize the loss of snakes by providing alternate hibernation locations. Development of 5.25 acres of habitat may also result in harm and harassment of individual snakes by causing snakes to alter daily behavioral patterns. Snakes may be temporarily or permanently displaced from portions of their former habitat. Since the snakes are very mobile and somewhat adaptable to human presence, this effect is not likely to result in mortality, but will likely result in harassment, as the snakes may be forced to use more marginal habitat, to move to areas of better habitat, or to use smaller areas of former habitat.

Effect of the incidental take

Collectively, the effects of the action are expected to result in death of some individuals, reduced overwinter survival of some individuals, and harm and harassment in the form of alteration of daily behavioral patterns of some individuals. The effect on the population may be lost reproductive capacity due to mortality, and a short-term decline in the size of the population on Long Point and on the Property.

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of proposed critical habitat. With implementation of the proposed project, it is reasonable to expect that 5.25 acres of Lake Erie water snake habitat will be permanently lost, 15 adult snakes will be taken, additional immature snakes will be taken, and harm and harassment of individual snakes may occur during the 15-year duration of the ITP. The Service, however, believes that compliance with the proposed conservation measures will substantially reduce the potential effects to the species and its habitat to the extent that the long-term viability of the Lake Erie water snake within the action area will not be adversely affected.

Reasonable and prudent measures

This biological opinion and incidental take statement is premised on the full compliance of the obligations to implement conservation measures outlined for Alternative 3 in Section 2.7 of the HCP, "Measures to avoid and minimize take," and Section 8.4 of the HCP, "Monitoring."

1. The Service believes that all measures proposed in the EA/HCP are necessary and appropriate to minimize take of Lake Erie water snakes. Upon issuing the ITP, the

Service will take the necessary steps to ensure that the HCP applicants complete all conservation measures.

Terms and conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The Service will, through enforceable terms and conditions, require the Applicant to ensure through written correspondence that all current and future lot owners are aware of the conservation measures identified in the HCP and their responsibilities and liabilities for abiding by these measures, and agree to abide by these measures.

2. The Service will ensure compliance with the monitoring and reporting of artificial hibernacula status, as described in the HCP.

The Service believes that no more than 5.25 acres of Lake Erie water snake habitat will be permanently lost, and that no more than 15 adult snakes and additional immature snakes will be taken within the LPHA Property. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable prudent measures provided. LPHA must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

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